IN THE CLAIMS

Please amend the claims as follows:

1. An image data processing method of automatic adaptation of 3-D surface Model to image features, for Model-based image segmentation, comprising creating a deformable tubular mesh model for fitting a 3-D path composed of a set of ordered points and automatically adapting the mesh radius based on the curvature of the 3-D path and sample distance of the path points and a predefined input radius.

2. The image processing method of Claim 1, of creating the deformable model with 2-simplex meshes or triangular meshes or any other kind of meshes, having a tubular structure for fitting a 3-D path, which is the centerline of a 3-D tubular object of interest that may present all kinds of curvatures, and of mapping the 3-D deformable tubular mesh model onto the 3-D surface of the tubular object of interest, which is represented in a gray level 3-D image.

3. The image processing method of ~~one of Claims 1 or 2~~claim 1, comprising:

computing a 3-D path that corresponds to the centerline of a

tubular object of interest to segment and defining segments on said 3-D path;

creating an initial straight deformable cylindrical mesh model, of any kind of mesh, with a length defined along its longitudinal axis equal to the length of the 3-D path;

dividing this initial mesh model into segments of length related to the different segments of the 3-D path;

computing, for each segment of the mesh, a rigid-body transformation that transforms the initial direction of the mesh into the direction of the related segment of the 3-D path, and applying this transformation to the vertices of the mesh corresponding to that segment.

4. The image processing method of Claim 3, comprising computing rigid-body transformations related to the successive segments, which transformations, are blended in between two consecutive segments.

5. The image processing method of Claim 4, for limiting self-intersections between bent parts of the mesh model, comprising computing rotations for rigid-body transformations between consecutive segments, wherein a linear interpolation is used between two rotations for 3-D rigid body transformation blending.

6. The image processing method of ~~one of Claims 1 to 5~~claim 1, for avoiding self-intersections in the bent regions of the tubular deformable mesh model together with sharp radius changes from one segment of the mesh model to the other, comprising:

modulating the radius of the cylindrical deformable mesh model according to the local curvature of the 3-D path.

7. The image processing method of Claim 6, comprising approximating the local curvature, and applying the radius modulation technique chosen among linear blending or bi-cubic spline interpolation from one radius to the other.

8. The image processing method of ~~one of Claims 1 to 7~~claim 1, for minimizing Mesh Torsion, comprising computing the minimal 3-D rotation from the initial mesh direction to a target segment.

9. The image processing method of Claim 8, comprising defining rotation between segments with an axis parameter and with a rotation angle parameter and computing these parameters iteratively from one segment to the other so that the new rotation for a current segment is computed as a composition of the found rotation for the previous segment and the minimal rotation from the previous

and the current segment.

10. A medical viewing system comprising means for acquiring 3-D medical image data of a 3-D object of interest having substantially tubular parts, a suitably programmed computer or a special purpose processor having circuit means, which are arranged to process these image data according to the method as claimed in ~~one of Claims 1 to 9~~claim 1;

and display means to display the medical images.

11. A medical examination apparatus having:

Means to acquire a three-dimensional image of an organ of a body having substantially tubular parts; and

a medical viewing system according to Claim 10.

12. A computer program product comprising a set of instructions for carrying out the method as claimed in ~~one of Claims 1 to 9~~claim 1.